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ABSTRACT

Efforts by the Navy in the early 1960's to reduce training time and costs with instructional technology resulted in efficient technical training, but at the expense of motivation and "espirit de corps." A Group Assisted Self-Paced (GRASP) program was initiated at one technical school in an attempt to overcome the previous drawbacks. GRASP is individualized, as was prior instruction, but where the associated shop work previously had staggered beginning times, students now progress in groups of 16. Each group has a permanent learning supervisor and a single identifiable group for the entire length of the school. By retaining self-paced, individualized instruction, yet building in group identity and instructor leadership, the GRASP program has proved even more efficient than purely individualized instruction. (DAG)

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MINIMIZE OR MAXIMIZE?

EDUCATION AND TRAINING FOR TOMORROW'S TECHNICAL NAVY

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Mr. R. Manley of the HT"A" School at Service Schools Command, San Diego, provided thorough coverage of and insight to the GRASP program.

Dr. E. Chenette of the Chief of Naval Technical Training staff provided assistance in identifying trends, problems and successes within the Naval Technical Training Command.

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Today's Navy is a technological force. The Navy maintains computer-linked weapons and communications systems, forming a global blanket of security, deterrence, and defense. These systems will be as effective as the personnel who maintain and employ them, and not surprisingly, the success of Naval technical training is an object of increasing concern.

But the Navy does not only train personnel--it must also educate. It must instill dispositions toward teamwork, an "esprit de corps", a sense that the well being of the Navy rests in each person doing his or her job in the most excellent manner possible, and in concert with those around him.

This is not seafaring sentiment but a fact of survival. Part of each sailor's education has always been and will always be to build a sense of pride, accountability, and interdependence. This elusive but essential curriculum is referred to as "good order and discipline".

The conventional classroom could be counted upon to both train and educate. The instructor stood at the front of the class and lectured. He or she was the giver of knowledge and the judge. Instructor's received attention and response from every student intent upon passing the course.

This attention was returned in kind, in the form of eye and voice contact and those ever-present questions. Students also received assistance from each other. They often worked together in class and in lab, since the assignment for everyone that day was the same.

Through this 3-way communication, young sailors were led, pushed, pulled, cajoled, and otherwise directed through the course. In Transactional Analysis terms, there was a whole lot of stroking going on.

The system was not infallible, but by and large it worked, meeting the training, education, and human needs of students and instructors alike.

In the early 1960's this approach was seriously questioned, due not so much to its inadequacies as to its inefficiencies. The trend toward greater technology was in full swing, with an accompanying increase in training requirements, but budgets were in decline. Naval educators asked themselves how they could train more students, with less money, equally well. They turned to instructional technology for the answer.

In 1963, the Navy initiated programmed instruction at Memphis, hoping to reduce training time and cost through a combination of systematic course design (which eliminates irrelevent material) and programmed delivery. Twenty-five courses were reduced an overall 43%, which cut training support costs and increased man-hours available to the fleet.[1]

Systematic design and programmed delivery were here to stay, but the Navy decided that before full benefits could be tapped, a third element of self-pacing would have to be added, and that it should be supported through computer managed instruction.

CMI was initiated in 1968, again at Memphis. A central computer was set up to support aviation courses with programmed instruction delivered off-line. The computer was used to track students through the course, evaluate tests and assignments, and prescribe remedial instruction. If students still could not meet the objective following remediation, the computer referred them to the instructor.

By applying instructional technology on three fronts--design, delivery and pacing--average completion time was cut 50%.[2] The efficiencies of CMI were clearly established, and the system has grown. Today, it supports courses at Memphis, San Diego, Great Lakes, and Orlando, with an average daily student load of 5700.

There is no doubt that Naval educators have demonstrated how to minimize training time and cost through instructional technology. What remains to be determined is the cumulative effect of these methods on the good order and discipline that are so essential to Navy life.

Since the pioneering of programmed instruction, personnel have expressed reservations about effectively replacing--or duplicating--the classroom instructor. These reservations were passed off by many as resistance to change. But in the 16 intervening years they have not disappeared. In fact, today there is a significant undertow of concern.

In August of last year, this concern was expressed by the Chief of Naval Technical Training. He noted the importance of the role that technical trainers are placed in, and I quote, to "mold and shape young sailors in their formative years, to foster attributes of effective worth . . . for the betterment of our Navy and our nation."

He was disturbed by reports that graduates of technical schools do not exhibit the motivation the fleet expects, and directed training commands to ensure that they provide military motivation, as well as technical competency, in all their schools.

He formed a committee to determine what developments, if any, might have contributed to a loss of motivation and military smartness. The committee solicited inputs from the commanding officers of training activities. The majority of these responses specifically pointed to current instructional technology as a possible factor.

One CO wrote that "The self-paced system...does not compete with the lock-step method in terms of good order and discipline and the motivation of students".

Another wrote that "An area of concern...is the stress on the student to hurry through self-paced courses...the self-paced system is limited in its ability to build on the teamwork learned in recruit training..."

One of the most compelling inputs of all was as follows: "We must recognize that CMI concepts, if taken literally, can eliminate the interaction between staff and students, and in doing so, can eliminate the opportunity for instructors to sell the Navy. Motivation for the Navy comes from the association between older career sailors and young recruits. Sea experiences (sometimes known as sea stories) are as important in the development of the young sailor as are technical manuals and tests in the development of the technician. This interaction must be provided, in some form, no matter how sophisticated our training methods become. Without it, the trainee's team spirit in support of the Navy can easily be subjugated to the short-term goal of completing the course."

There is no scientific data supporting or refuting these contentions, nor is there likely to be. But the perceptions of these commanding officers and the personnel they speak for cannot be ignored. To discount this concern as resistance to change would be folly.

The voices of the undertow are trying to tell us that something is missing from the learning lab, something that is essential in nurturing self-esteem and teamwork. We have engineered excess time and material out of the technical curriculum. With limited resources, there is no other direction to take. But now, we must just as carefully and deliberately build human interaction back into it.

Commands seeking ways to reconcile education needs with training imperatives may well study the precedents being set at Hull Maintenance Technician "A" School in San Diego. This school provides excellent theater for the conflicting trends that have been sweeping technical training. But more importantly, it provides a prototype solution.

HT"A" students study four specialties: arc welding, gas welding, pipefitting, and sheet metal fabrication. Because of the extensive facilities required for these four areas, students do a lot of moving from building to building, from classroom to lab.

The HT"A" school ran for years on conventional, lock-step classes. Then in January of 1974 a programmed, self-paced curriculum was introduced. Students moved from phase to phase and from instructor to instructor as individuals, utterly detached from any group. Initially, the program was a "minimization" success, with average completion time dropping from 60 to 48 days.[3]

But this initial success was eroded as demotivation and disciplinary problems set in. A few months into the program, fully one-third of the students received some type of disciplinary action. In particular, there was an alarming increase in the number of unauthorized absences.

For the HT"A" School, it was back to the drawing board to try again. The school conceived and instituted the GRASP program in late 1974. GRASP is an acronym for "Group Assisted Self-Paced".

Within GRASP, instruction is still individualized. Students choose between programmed texts and self-study narratives. Shop work is, of course, hands-on. Instead of staggered beginning times, students start instruction in groups of 16. Each group is assigned a permanent learning supervisor/ counselor who travels with them throughout the school. This instructor is present at every phase, knowing the learning styles and problems of every student, helping them meet the objectives.

A second instructor is also present: A subject specialist who does not travel with the students but stays within a particular area. Between the two instructors, both the training and support needs of the students are met.

Most students also have a stable, identificable group. Those who fall two or more days behind the group average may be set back to another group. Those who are two or more days ahead in their studies may accelerate. But most elect to stay with their original group and help others catch up, a practice which enhances both peer teaching and esprit de corps.

Under the GRASP program, the school has succeeded in restoring motivation and military discipline to the classroom. But is such a system capable of retaining the benefits of self-paced, individualized instruction? Let's review this chart which compares the three instructional systems:

TRAINING ACHIEVEMENT COMPARISON

TRAINING TYPE	COMPLETION TIME	POST-COURSE TEST SCORE
CONVENTIONAL	60	85%
SELF-PACED	51	81%
GRASP	43	86%

You can see that post-test scores have remained relatively constant, 85% under conventional instruction and 86% under GRASP, after dropping to 81% under the purely individualized system. Average completion time dropped from 60 to 51 days under purely self-paced instruction, and dropped further to 43 days under GRASP.

By retaining self-paced, individualized instruction yet building in group identity and instructor leadership, the GRASP program has proved even more efficient than purely individualized instruction.

The GRASP program represents a model conciliation between conflicting goals. It heralds a third current in technical training: the synthesis. Navy schools cannot choose between minimizing training time and cost or maximizing good order and discipline because they clearly must do both. HT"A" School is one of the places showing us how. Tomorrow's task is to adapt and extend the HT"A" School's success to other schools through the Navy Technical Training Command.

NOTES

1. For further information on this project see G. Douglas Mayo, Programmed Instruction in Technical Training, U. S. Naval Personnel Research Activity, San Diego. SRR 69-28, June 1969.

2. For further information on this project, see Stuart B. Carson, et al, An Evaluation of Computer-Managed Instruction in Navy Technical Training, U. S. Navy Personnel Research and Development Center, San Diego. June 1975. (Distributed by NTIS: National Technical Information Service, U. S. Department of Commerce).

3. These and other data on the relative success of instructional systems with HT"A" School, Service Schools Command San Diego, were provided by Mr. R. Manley, the school's Education Specialist.